Alg.

((Sheet 1))

[1] Complete :

1) $\sqrt[3]{216}$ = ...

2) $\sqrt[3]{(\frac{1}{8})^2}$ = ...

3) $\sqrt[3]{-64} + \sqrt{16}$ = ...

4) $\sqrt[3]{a^3}$ = ...

5) $X^3 = 64$ then $\sqrt{X}$ = ...

6) $\sqrt[3]{X^6} = \sqrt{.....}$

7) $\frac{X}{3} = \frac{9}{X^2}$ Then X = ...

8) If the area of square = 169 cm^2 Then the side length = ... cm .

9) If the volume of cube 64 cm^3 Then its edge = ... cm .

10) If the volume of cube 125 cm^3 Then the sum of edges = ...cm .

[2] Find S.S of equations in Q :

1) $(X - 2)^2 = 25$

2) $(X + 3)^2 = 64$

3) $\sqrt{2X - 1} = 3$

4) $\sqrt{2X}$ -3 = 2

5) $(X-2)^3 = 27$

6) $(3X+1)^3 = -8$

7) $(2X+1)^3 - 7 = 20$

8) $(X+1)^3 - 2 = 6$

9) $X^3 + 16 = \frac{3}{8}$

10) $\sqrt[3]{X-2} = 3$

11) $(X^3 - 14)^2 = 169$

12) $\sqrt{(X-2)^2} = 4$

((Sheet 2))

" The set of irrational numbers Q`"

Which of the following irrational and the other rational :

1) $\sqrt{4}$ 2) $\sqrt[3]{125}$ 3) $\sqrt[3]{-8}$

4) $\sqrt{7}$ 5) 2.5 6) $\sqrt[3]{4}$

7) $\frac{22}{7}$ 8) π 9) $\frac{10}{5}$

Find the value of X :

1) $X < \sqrt{2} < X + 1$ 2) $X < \sqrt{80} < X + 1$

3) $X < \sqrt[3]{50} < X + 1$

Choose the correct answer :

1) The irrational number in the following number is .....

a) $\sqrt{\frac{1}{4}}$ b) $\sqrt[3]{8}$ c) $\sqrt{\frac{4}{9}}$ d) $\sqrt{2}$

2) The irrational number located between 2 and 3 is .....

a) $\sqrt{10}$ b) $\sqrt{7}$ c) 2.5 d) $\sqrt{3}$

3) The area of square whose side length is $\sqrt{3}$ cm = ... cm^2 .

a) $4\sqrt{3}$ b) 9 c) 3 d) 6

Prove that :

1) $\sqrt{2}$ is included between 1.4 and 1.5

2) $\sqrt[3]{15}$ is included between 2.4 and 2.5

Represent on the number line :

1) $\sqrt{7}$ 2) $1 + \sqrt{7}$ 3) $2 - \sqrt{7}$ 4) $2 + \sqrt{7}$

((Sheet 3))

" The set of real numbers "

- $R = R_+ \cup \{0\} \cup R_-$
- $R = Q \cup Q'$
- $R^* = R - \{0\}$

Complete :

1) $R = \ldots\ldots \cup \ldots\ldots \cup \ldots\ldots$

2) $R = \ldots\ldots \cup \ldots\ldots$

3) $R_+ \cap R_- = \ldots\ldots$

4) $R_+ \cup R_- = \ldots\ldots$

5) $Q \cup Q' = \ldots\ldots$

6) $Q \cap Q' = \ldots\ldots$

7) $R - \{0\} = \ldots\ldots$

8) $R - R_+ = \ldots\ldots$

9) $R - R_- = \ldots\ldots$

10) $R - R^* = \ldots\ldots$

11) $R - Q = \ldots\ldots$

12) $R - Q' = \ldots\ldots$

Find S.S of equations in R :

1) $\frac{1}{2} X^2 - 5 = 0$

2) $\frac{3}{4} X^2 + 2 = -11$

((Sheet 4))

" Intervals "

- Interval is the set of all numbers which are subset from real numbers

[[Notes]]

1) $\{ X : X \in R , -2 \leq X \leq 5 \} = [-2 , 5]$ " closed interval "

2) $\{ X : X \in R , -2 < X < 5 \} =] -2 , 5 [$ " open interval "

3) $\{ X : X \in R , -2 \leq X < 5 \} = [-2 , 5 [$ " semi open or semi closed interval "

4) $\{ X : X \in R , X \geq 3 \} = [3 , \infty [$

5) $\{ X : X \in R , X < 2 \} =] - \infty , 2 [$

6) $R =]- \infty , \infty [$

7) $R_+ =]0 , \infty [$

8) $R- =]- \infty , 0 [$

9) The set of non – negative real numbers = $[0 , \infty [$

10) The set of non – positive real numbers = $] - \infty , 0]$

- **Put $\in$, $\notin$:**

1) 2 ..... [1 , 5]

2) -2 .....] -2 , 1]

3) 0 ..... [-1 , 4 [

- **If X = [2 , 5 [, Y = [-1 , 3 [Find by using number line :**

1) $X \cap Y$ 2) $X \cup Y$ 3) $X - Y$

4) $Y - X$ 5) X 6) Y`

- **Find by using number line :**

1) $[-1 , 4] \cap [2 , 5]$ = ...

2) $[-3 , 3] \cup [1 , 5]$ = ...

3) $[-2 , 3] - [1 , 4]$ = ...

4) $[-3 , 0] \cap]0 , 2] = \ldots\ldots\ldots\ldots$

5) $[-1 , \infty [\ U \ [-3\ 4] = \ldots\ldots\ldots\ldots$

6) $[-1 , 5] -]-1 , 5 [= \ldots\ldots\ldots\ldots$

7) $]-\infty , 3] \cap [-4 , \infty [= \ldots\ldots\ldots\ldots$

8) $]-\infty , 2] -]-\infty , 0] = \ldots\ldots\ldots\ldots$

9) $[3 , 5] \cup \{3 , 5\} = \ldots\ldots\ldots\ldots$

10) $[1 , 4] \cap \{1 , 4\} = \ldots\ldots\ldots\ldots$

11) $[1 , 4] - \{1 , 4\} = \ldots\ldots\ldots\ldots$

12) $]2 , 5 [\cap \{-2 , 3 , 4\} = \ldots\ldots\ldots$

13) $R_+ \cap [0 , 5] = \ldots\ldots\ldots\ldots$

14) $R \ \cup \ ]-1 , 4] = \ldots\ldots\ldots$

15) $R - [-1 , 1] = \ldots\ldots\ldots\ldots$

Complete :

1) If $X \in [-3 , 4]$, then $X^2 \in \ldots\ldots\ldots\ldots$

2) The sum of all real numbers in $[-5 , 5]$ is $\ldots\ldots\ldots\ldots$

3) If $X \in [1 , 16]$, then $-\sqrt{X} \in \ldots\ldots\ldots\ldots$

((Sheet 5))

" Operations on the real numbers "

Find each of the following in simplest form :

1) $\sqrt{2} + 3\sqrt{2} + 2\sqrt{2} =$ .....

2) $5\sqrt{3} - 2\sqrt{3} + 4\sqrt{3} =$ .....

3) $\sqrt{5} - \sqrt{3} + 2\sqrt{5} + \sqrt{3} =$ .....

4) $3\sqrt{2} - 2\sqrt{5} + 5\sqrt{2} + \sqrt{5} =$ .....

5) $\sqrt{3} \times \sqrt{3} =$ .....

6) $\sqrt{2} \times \sqrt{3} =$ .....

7) $2\sqrt{2} \times 3\sqrt{5} =$ .....

8) $2\sqrt{2} \times 3\sqrt{2} =$ .....

9) $\sqrt{2}\ (5 + \sqrt{2}) =$ .....

10) $(\sqrt{2} + 1)(\sqrt{3} + 2) =$ .....

Put the denominator as whole number :

1) $\frac{10}{\sqrt{5}}$ 2) $\frac{2}{3\sqrt{2}}$ 3) $\frac{\sqrt{2}+3}{\sqrt{2}}$

Complete :

1) The additive inverse of $\frac{6}{\sqrt{2}}$ = ...

2) The additive inverse of $(\sqrt{2} - \sqrt{5})$ = ...

3) The multiplicative inverse of $\sqrt{5}$ is .....

4) The multiplicative inverse of $\frac{\sqrt{2}}{6}$ is .....

((Sheet 6))

" Operations on the square roots "

Find in simplest form :

1) $\sqrt{2} + \sqrt{18} + \sqrt{8}$

2) $\sqrt{98} - \sqrt{128} - \sqrt{18} + 4\sqrt{2}$

3) $2\sqrt{3} + \sqrt{27} - \sqrt{48}$

4) $\sqrt{32} - \sqrt{72} + 6\sqrt{\frac{1}{2}}$

5) $2\sqrt{5} + 4\sqrt{20} - 5\sqrt{\frac{1}{5}}$

6) $\sqrt{3} + \frac{3}{\sqrt{3}} - \sqrt{2} \times \sqrt{6}$

7) $\sqrt{27} + \sqrt{8} - 2\sqrt{12} + \sqrt{18}$

8) $\sqrt{3} + 2\sqrt{20} + \sqrt{12} + \sqrt{45}$

Complete :

1) If $X = \frac{\sqrt{6}}{\sqrt{2}}$ Then X^{-1} = ...

2) $\sqrt{5}$, $\sqrt{20}$, $\sqrt{45}$, $\sqrt{80}$, ... in the same pattern

((Sheet 7))

" The two conjugate numbers "

[[Note]]

1) $(X+3), (X-3)$ are conj

2) $(\sqrt{3}+\sqrt{2}), (\sqrt{3}-\sqrt{2})$ are conj

3) $(\sqrt{5}-1), (\sqrt{5}+1)$ are conj

4) $(\sqrt{5}+\sqrt{3}), (\sqrt{5}+\sqrt{3})$ not conj

1. If $X = \frac{2}{\sqrt{7}-\sqrt{5}}$ $Y = \sqrt{7}-\sqrt{5}$, Find $(X+Y)^2$

2. If $X = \sqrt{5}-\sqrt{2}$ $Y = \frac{3}{\sqrt{5}-\sqrt{2}}$ Prove that X and Y are conjugate numbers

   then Find $X^2 - 2XY + Y^2$

3. If $X = \sqrt{7}+\sqrt{5}$ $Y = \frac{2}{X}$

   Find $\frac{X+Y}{XY}$

4. If $X = \frac{4}{\sqrt{7}-\sqrt{3}}$ and $Y^{-1} = \frac{1}{\sqrt{7}-\sqrt{3}}$ Find X^2Y^2

((Sheet 8))

" Operations on the cube roots "

Find in simplest form :

1) $\sqrt[3]{2} + \sqrt[3]{16} + 2\sqrt[3]{54}$

2) $\sqrt[3]{24} - 2\sqrt[3]{3} + \sqrt[3]{81}$

3) $\sqrt[3]{-54} + \sqrt[3]{16} - \sqrt[3]{250}$

4) $\sqrt[3]{81} + \sqrt[3]{-24} - 3\sqrt[3]{\frac{1}{9}}$

5) $\sqrt[3]{108} - 2\sqrt[3]{4} - \sqrt[3]{\frac{1}{2}}$

6) $\sqrt[3]{3} - \sqrt[3]{4} \times \sqrt[3]{6} + 3\sqrt[3]{\frac{1}{9}}$

7) $\frac{7}{3}\sqrt{18} + \sqrt[3]{54} - 7\sqrt{2} + \sqrt[3]{16}$

8) $\sqrt[3]{-16} + \frac{14}{\sqrt{7}} - \sqrt{28} + \sqrt[3]{54}$

((Sheet 9))

" Applications on the real numbers "

Important rules :

[[Cube]]

$$L.S.A = 4\,L^2$$

$$T.S.A = 6\,L^2$$

$$Volume = L^3$$

[[Cuboid]]

$$L.S.A = 2\,(X + Y) \times Z$$

$$T.S.A = 2\,(XY + YZ + ZX)$$

$$Volume = XYZ$$

[[Circle]]

$$Circumference = 2\,\pi\,r$$

$$Area = \pi\,r^2$$

[[Sphere]]

$$Volume = \frac{4}{3}\,\pi\,r^3$$

$$Area = 4\,\pi\,r^2$$

[[Right circular cylinder]]

$$L.S.A = 2\pi\,rh$$

$$T.S.A = 2\pi\,rh + 2\pi\,r^2$$

$$Volume = \pi\,r^2\,h$$

Complete :

1) If the edge of a cube is 5 cm then its volume = ……cm^3 .
2) If the volume of cube 64 cm^3 . Then its lateral area = ……cm^2
3) If the total area of cube 96 cm^2 . Then the area of one face = ……cm^2
4) Aright circular cylinder with volume 40π cm^3 and its height 10 cm then its base radius = ……
5) The volume sphere whose diameter 6 cm = ……cm^3 .
6) If the volume of sphere $\frac{9}{16}\pi$ cm^3 . Then its radius = …… cm .

Problems :

1) A cube whose lateral area is 36 cm^2 . Find its total area and its volume .
2) A cube its volume 27 cm^3 . Find its total area .
3) The sum of all edges of a cube is 60 cm . Find its volume .
4) Acuboid its dimensions 3 cm , 4 cm , 5 cm . Find its total area and its volume .
5) A circle its area 154 cm^2 . Find its circumference .
6) Aright circular cylinder its volume 924 cm^3 and its height 6 cm . Find the lateral area .
7) Find the height of right circular cylinder whose height is equal to its base radius and its volume is 72π cm^3 .
8) The volume of sphere is 4188 cm^3 . Find its radius length .
9) Ametalic sphere with diameter 6 cm has got melt and changed into circular cylinder with radius 3 cm . Find its height .

((Sheet 10))

" Solving equations and inequalities of first degree in one variable in R "

Find S.S of equations in R

1) $2 \times -3 = 4$

2) $\sqrt{5} \times -1 = 4$

Find S.S of inequalities in R and graph the S.S on number line :

1) $2x - 1 \geq 3$

2) $2x + 5 \geq 3$

3) $3 - 2x \geq 7$

4) $5 - 3x \leq 11$

5) $-8 \leq 3x + 1 \leq 4$

6) $13 \geq 2x - 1 \geq 5$

7) $|-3| < 2x - 1 < 5$

8) $5 \leq \frac{-2x+6}{3} < 4$

9) $2 + 2x \leq 3x + 3 < 5 + 2x$

10) $x - 1 < 3x - 1 \leq x + 1$

((Sheet 11))

" Relation between two variables "

1) Find three ordered pairs satisfy this relation :

$2X + Y = 5$

2) Represent graphically

$X + 2Y = 3$ $\qquad\qquad$ $Y - 3X = 1$

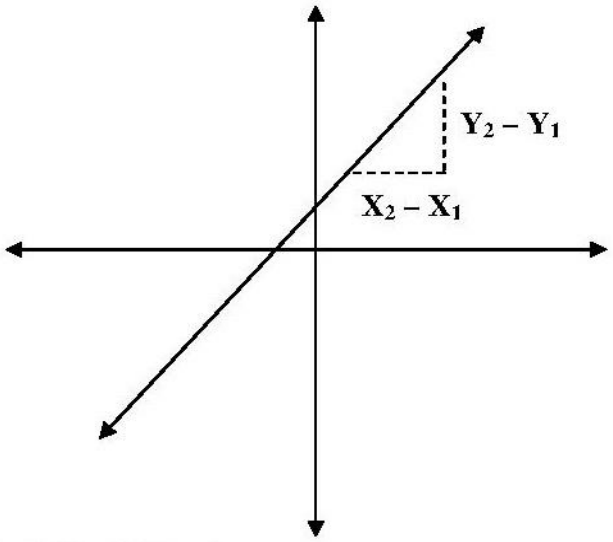
3) Complete :

1) If (3 , 6) satisfies $Y = KX$. Then $K =$ .....
2) If (3 , 1) satisfies $Y - 3X = a$. Then $a =$ .....
3) If (3 , a) satisfies $Y - 2X = 4$. Then $a =$ .....
4) If (K , 2 K) satisfies $X + Y = 15$. Then $K =$ .....
5) If (2 , -5) satisfies $3X - Y + C = 0$. Then $C =$ .....
6) If the relation $2X + Y = 6$. Then the intersection point of

   X – a x is ..... and Y – a x is .....

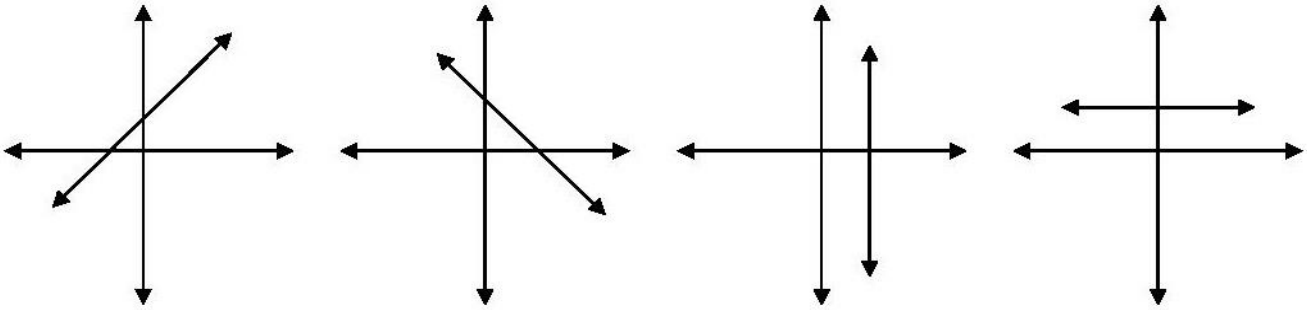
((Sheet 12))
" Slope of straight line "

$$S = \frac{Y_2 - Y_1}{X_2 - X_1}$$



1) Classify the slope of st. line in each of the following

" Positive – negative – zero – undefined "



2) Complete :

1) The slop of any horizontal st. line = ...

2) The slope of any vertical st. line = ...

3) If A , B , C , are collinear then the slope of $\overleftrightarrow{AB}$ = ...

4) The slope of st. line which passes through (2 , 3) (5 , 7) is .....

5) If the st. line which passes through (2 , 3) (5 , k) parallel to X – a x is then K .....

6) If the st. line which passes through (3 , 4) (K , 7) parallel to Y – a x is then K = ...

3) If the slope st. line which passes through two points (1 , 3) , (1 , K) equal 3 . Find the value of K .

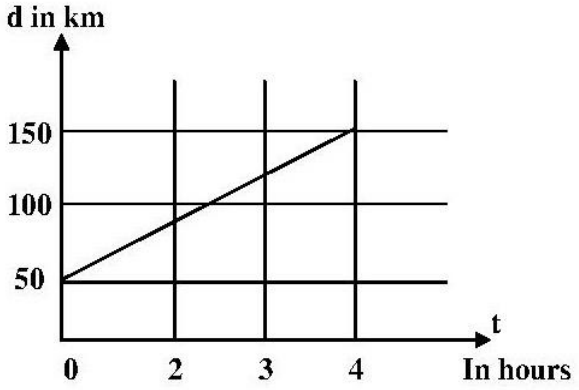
4) Prove that A , B and C are collinear where A (1 , 1) B (2 , 2) C (-3 , -3)

((Sheet 13))

" Real life applications on the slope "

1) The opposite graph represents the motion of a car moving with uniform velocity

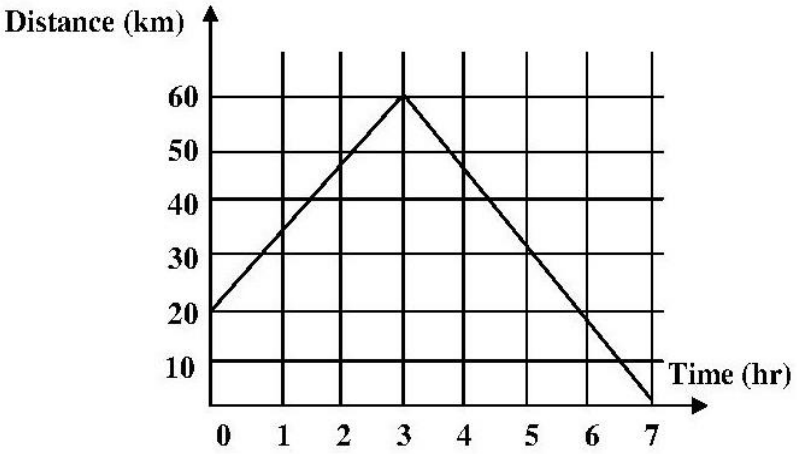
determine the velocity of the car .



2) The following figure represents the motion of bicycle find the regular speed during

a) The first three hours

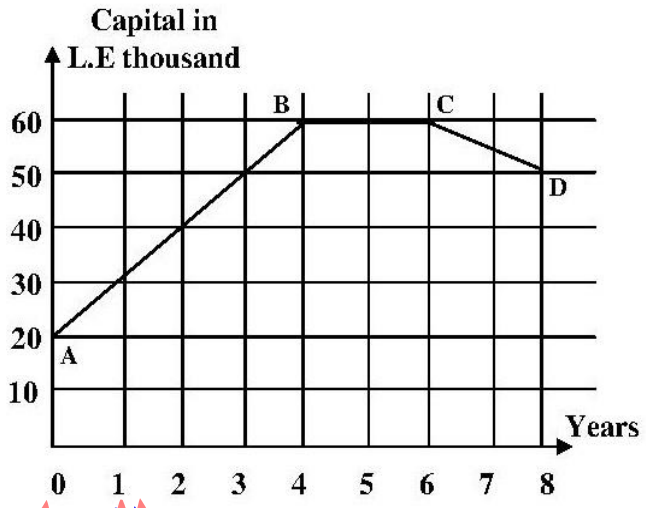
b) The next four hours



3) The opposite figure shows capital change of accompany during 8 years

a) Find the slope of $\overleftrightarrow{AB}$, $\overleftrightarrow{BC}$, $\overleftrightarrow{CD}$

b) Find the starting capital of the company



" Statistics "

1) Complete :

a) The arithmetic mean of 5 , 12 , 17 , 6 is .....

b) If the lower limit of a set is 8 and the upper limit is 14 then its centre is .....

c) If the lower limit of a set is 4 and its centre is 9 then its upper limit = ...

d) The median of values 9 , 4 , 8 , 1 , 3 is .....

e) The median of values 3 , 7 , 2 , 9 , 5 , 11 is .....

f) The point of intersection of ascending and descending cumulative frequency curve determines ..... on the set axis

g) The mode of values 5 , 3 , 8 , 5 , 9 is .....

h) If the mode of values 12 , 7 , X + 1 , 7 , 12 is 7 then X = ...

2)

Sets	5-	15-	25-	35-	Total
Freq	6	8	4	2	20

Find the mean

3)

Sets	0-	2-	4-	6-	Total
Freq	1	2	2	5	10

Find the median

4)

Sets	30-	40-	50-	60-	70-	80-	Total
Freq	3	4	12	8	7	6	40

Find the mode

Revision on algebra

Unit 1

1) Cube root of rational number:

[1] Complete :

1) $\sqrt[3]{216}$ = ...

2) $\sqrt[3]{(\frac{1}{8})^2}$ = ...

3) $\sqrt[3]{-64} + \sqrt{16}$ = ...

4) $\sqrt[3]{a^3}$ = ...

5) $X^3 = 64$ then $\sqrt{X}$ = ...

6) $\sqrt[3]{X^6} = \sqrt{.....}$

7) $\frac{X}{3} = \frac{9}{X}$ Then X = ...

8) If the area of square = 169 cm^2 Then the side length = ... cm .

9) If the volume of cube 64 cm^3 Then its edge = ... cm .

10) If the volume of cube 125 cm^3 Then the sum of edges = ...cm .

[2] Find S.S of equations in Q :

1) $(X - 2)^2 = 25$

2) $(X + 3)^2 = 64$

3) $\sqrt{2X - 1} = 3$

Find s.s. in Q

$(X - 2)^3 = 27$

$(3 X + 1)^3 = -8$

$(2 X + 1)^3 - 7 = 20$

$(X + 1)^3 - 2 = 6$

$X^3 + 16 = \frac{3}{8}$

2) Set of irrational numbers

Which of the following numbers is rational and the other irrational

1) $\sqrt{4}$ 2) $\sqrt[3]{125}$ 3) $\sqrt[3]{-8}$

4) $\sqrt{7}$ 5) 2.5 6) $\sqrt[3]{4}$

7) $\frac{22}{7}$ 8) Π 9) $\frac{10}{5}$

Find the value of X :

) $X < \sqrt{2} < X + 1$

) $X < \sqrt[3]{50} < X + 1$

Prove that :

1) $\sqrt{2}$ is included between 1.4 and 1.5

2) $\sqrt[3]{15}$ is included between 2.4 and 2.5

Choose the correct answer :

1) The irrational number in the following number is .....

a) $\sqrt{\frac{1}{4}}$ b) $\sqrt[3]{8}$ c) $\sqrt{\frac{4}{9}}$ d) $\sqrt{2}$

2) The irrational number located between 2 and 3 is .....

a) $\sqrt{10}$ b) $\sqrt{7}$ c) 2.5 d) $\sqrt{3}$

3) The area of square whose side length is $\sqrt{3}$ cm = ... cm^2 .

a) $4\sqrt{3}$ b) 9 c) 3 d) 6

3) The set of real numbers

Complete :

1) R = ... U ..... U .....

2) R = ... U .....

3) $R_+ \cap R_-$ = ...

4) $R_+ \cup R_-$ = ...

5) Q U Q` = ...

6) Q ∩ Q` = ...

7) R – {0} = ...

8) $R - R_+$ = ...

9) $R - R_-$ = ...

10) R – R* = ...

11) R – Q = ...

12) R - Q` = ...

Find S.S of equations in R :

1) $\frac{1}{2} X^2 - 5 = 0$

2) $\frac{3}{4} X^2 + 2 = -11$

4) Intervals

Put ∈ , ∉ :

1) 2 ..... [1 , 5]

2) -2 .....] -2 , 1]

3) 0 ..... [-1 , 4 [

If X = [2 , 5 [, Y = [-1 , 3 [Find by using number line :

1) X ∩ Y 2) X U Y 3) X – Y

4) Y – X 5) X 6) Y`

Find by using number line :

1) [-1 , 4] ∩ [2 , 5] = ...

2) [-3 , 3] U [1 , 5] = ...

3) [-2 , 3] – [1 , 4] = ...

4) [-3 , 0] ∩] 0 , 2] =.....

5) [-1 , ∞ [U [-3 4] = ...

6) [-1 , 5] –] -1 , 5 [= .....

7)]-∞ , 3] ∩ [-4 , ∞ [= .....

8)]-∞ , 2] –] -∞ , 0] = ...

9) [3 , 5] U { 3 , 5 } = ...

10) [1 , 4] ∩ { 1 , 4 } = ...

11) [1 , 4] – { 1 , 4 } = ...

12)]2 , 5 [∩ { -2 , 3 , 4 } = ...

13) R_+ ∩ [0 , 5] = ...

14) R U] -1 , 4] = ...

15) R_- - [-1 , 1] = ...

5) Operations on real numbers

Find each of the following in simplest form :

1) $\sqrt{2} + 3\sqrt{2} + 2\sqrt{2} =$ .....

2) $5\sqrt{3} - 2\sqrt{3} + 4\sqrt{3} =$ .....

3) $\sqrt{5} - \sqrt{3} + 2\sqrt{5} + \sqrt{3} =$ .....

4) $3\sqrt{2} - 2\sqrt{5} + 5\sqrt{2} + \sqrt{5} =$ .....

5) $\sqrt{3} \times \sqrt{3} =$ .....

6) $\sqrt{2} \times \sqrt{3} =$ .....

7) $2\sqrt{2} \times 3\sqrt{5} =$ .....

8) $2\sqrt{2} \times 3\sqrt{2} =$ .....

9) $\sqrt{2}\,(5 + \sqrt{2}) =$ .....

10) $(\sqrt{2} + 1)(\sqrt{3} + 2) =$ .....

Put the denominator as whole number :

1) $\frac{10}{\sqrt{5}}$ 2) $\frac{2}{3\sqrt{2}}$ 3) $\frac{\sqrt{2}+3}{\sqrt{2}}$

Complete :

1) The additive inverse of $\frac{6}{\sqrt{2}}$ = ...

2) The additive inverse of $(\sqrt{2} - \sqrt{5})$ = ...

3) The multiplicative inverse of $\sqrt{5}$ is .....

4) The multiplicative inverse of $\frac{\sqrt{2}}{6}$ is .....

6) Operation on square root

Find in simplest form :

1) $\sqrt{2} + \sqrt{18} + \sqrt{8}$

2) $\sqrt{98} - \sqrt{128} - \sqrt{18} + 4\sqrt{2}$

3) $2\sqrt{3} + \sqrt{27} - \sqrt{48}$

4) $\sqrt{32} - \sqrt{72} + 6\sqrt{\frac{1}{2}}$

5) $2\sqrt{5} + 4\sqrt{20} - 5\sqrt{\frac{1}{5}}$

6) $\sqrt{3} + \frac{3}{\sqrt{3}} - \sqrt{2} \times \sqrt{6}$

7) $\sqrt{27} + \sqrt{8} - 2\sqrt{12} + \sqrt{18}$

8) $\sqrt{3} + 2\sqrt{20} + \sqrt{12} + \sqrt{45}$

Complete :

1) If $X = \frac{\sqrt{6}}{\sqrt{2}}$ Then X^{-1} = ...

2) $\sqrt{5}$, $\sqrt{20}$, $\sqrt{45}$, $\sqrt{80}$, ... in the same pattern

7) The conjugate numbers

1. If $X = \frac{2}{\sqrt{7}-\sqrt{5}}$ $Y = \sqrt{7} - \sqrt{5}$, Find $(X + Y)^2$

2. If $X = \sqrt{5} - \sqrt{2}$ $Y = \frac{3}{\sqrt{5}-\sqrt{2}}$ Prove that X and Y are conjugate numbers then Find $X^2 - 2XY + Y^2$

3. If $X = \sqrt{7} + \sqrt{5}$ $Y = \frac{2}{X}$

   Find $\frac{X+Y}{XY}$

4. If $X = \frac{4}{\sqrt{7}-\sqrt{3}}$ and $Y^{-1} = \frac{1}{\sqrt{7}-\sqrt{3}}$ Find X^2Y^2

8) Operation on cube root

Find in simplest form :

1) $\sqrt[3]{2} + \sqrt[3]{16} + 2\sqrt[3]{54}$

2) $\sqrt[3]{24} - 2\sqrt[3]{3} + \sqrt[3]{81}$

3) $\sqrt[3]{-54} + \sqrt[3]{16} - \sqrt[3]{250}$

4) $\sqrt[3]{81} + \sqrt[3]{-24} - 3\sqrt[3]{\frac{1}{9}}$

5) $\sqrt[3]{108} - 2\sqrt[3]{4} - \sqrt[3]{\frac{1}{2}}$

6) $\sqrt[3]{3} - \sqrt[3]{4} \times \sqrt[3]{6} + 3\sqrt[3]{\frac{1}{9}}$

7) $\frac{7}{3}\sqrt{18} + \sqrt[3]{54} - 7\sqrt{2} + \sqrt[3]{16}$

8) $\sqrt[3]{-16} + \frac{14}{\sqrt{7}} - \sqrt{28} + \sqrt[3]{54}$

9) Application on real numbers

Complete :

1) If the edge of a cube is 5 cm then its volume = ……cm^3 .
2) If the volume of cube 64 cm^3 . Then its lateral area = ……cm^2
3) If the total area of cube 96 cm^2 . Then the area of one face = ……cm^2
4) Aright circular cylinder with volume 40π cm^3 and its height 10 cm then its base radius = ……
5) The volume sphere whose diameter 6 cm = ……cm^3 .
6) If the volume of sphere $\frac{9}{16}\pi$ cm^3 . Then its radius = …… cm .

Problems :

1) A cube whose lateral area is 36 cm^2 . Find its total area and its volume .
2) A cube its volume 27 cm^3 . Find its total area .

3) The sum of all edges of a cube is 60 cm . Find its volume .
4) Acuboid its dimensions 3 cm , 4 cm , 5 cm . Find its total area and its volume .

5) A circle its area 154 cm^2 . Find its circumference .
6) Aright circular cylinder its volume 924 cm^3 and its height 6 cm . Find the lateral area .
7) Find the height of right circular cylinder whose height is equal to its base radius and its volume is 72π cm^3 .

8) The volume of sphere is 4188 cm^3 . Find its radius length .

9) Ametalic sphere with diameter 6 cm has got melt and changed into circular cylinder with radius 3 cm . Find its height .

10) Solving equations and inequality

1) $2x - 1 \geq 3$

2) $2x + 5 \geq 3$

3) $3 - 2x \geq 7$

4) $5 - 3x \leq 11$

7) $|-3| < 2x - 1 < 5$

8) $5 \leq \frac{-2x+6}{3} < 4$

9) $2 + 2x \leq 3x + 3 < 5 + 2x$

10) $x - 1 < 3x - 1 \leq x + 1$

Unit 2

1) Relation between two variables

1) Find three ordered pairs satisfy this relation :

$2X + Y = 5$

2) Represent graphically

$X + 2Y = 3$ $\qquad\qquad$ $Y - 3X = 1$

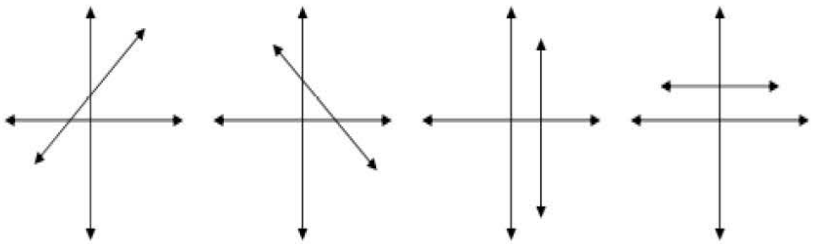
3) Complete :

1) If (3 , 6) satisfies $Y = KX$. Then $K =$ .....
2) If (3 , 1) satisfies $Y - 3X = a$. Then $a =$ .....
3) If (3 , a) satisfies $Y - 2X = 4$. Then $a =$ .....
4) If (K , 2 K) satisfies $X + Y = 15$. Then $K =$ .....
5) If (2 , -5) satisfies $3X - Y + C = 0$. Then $C =$ .....
6) If the relation $2X + Y = 6$. Then the intersection point of $X - a$ x is ..... and Y – a x is .....

2) Slope of straight line

1) Classify the slope of st. line in each of the following

" Positive – negative – zero – undefined "



2) Complete :

1) The slop of any horizontal st. line = ...

2) The slope of any vertical st. line = ...

3) If A , B , C , are collinear then the slope of $\overleftrightarrow{AB}$ = ...

4) The slope of st. line which passes through (2 , 3) (5 , 7) is .....

5) If the st. line which passes through (2 , 3) (5 , k) parallel to X – a x is then K .....

6) If the st. line which passes through (3 , 4) (K , 7) parallel to Y – a x is then K = ...

3) If the slope st. line which passes through two points (1 , 3) , (1 , K) equal 3 . Find the value of K .

4) Prove that A , B and C are collinear where A (1 , 1) B (2 , 2) C (-3 , -3)

Unit 3 statistics

1) Complete :

a) The arithmetic mean of 5 , 12 , 17 , 6 is .....

b) If the lower limit of a set is 8 and the upper limit is 14 then its centre is .....

c) If the lower limit of a set is 4 and its centre is 9 then its upper limit = ...

d) The median of values 9 , 4 , 8 , 1 , 3 is .....

e) The median of values 3 , 7 , 2 , 9 , 5 , 11 is .....

f) The point of intersection of ascending and descending cumulative frequency curve determines ..... on the set axis

g) The mode of values 5 , 3 , 8 , 5 , 9 is .....

h) If the mode of values 12 , 7 , X + 1 , 7 , 12 is 7 then X = ...

2)

Sets	5-	15-	25-	35-	Total
Freq	6	8	4	2	20

Find the mean

3)

Sets	0-	2-	4-	6-	Total
Freq	1	2	2	5	10

Find the median

4)

Sets	30-	40-	50-	60-	70-	80-	Total
Freq	3	4	12	8	7	6	40

Find the mode

Final revision algebra prep2 unit 1

1. Complete :

1) $[2, 5] \cup [1, 3] =$ ……

2) $\left(2\sqrt[3]{3}\right)^3 =$ ……

3) The conjugate number of the number $\frac{2}{\sqrt{5}-\sqrt{3}}$ is ……

4) The additive identity in R is …… and the multiplicative neutral in R is ….

5) The additive inverse of the element $-\sqrt{3}$ in R is ……

6) The multiplicative inverse of the element $\frac{1}{\sqrt{3}}$ is ……

7) The additive inverse of the number $(2-\sqrt{5})$ is ……

8) $\sqrt[3]{\frac{8x^3}{125\,a^9}}$ = ……

9) $\sqrt[3]{216} = \sqrt{\ldots\ldots}$

10) $\sqrt{25} = \sqrt[3]{\ldots\ldots}$

11) $\sqrt{3} \times \sqrt{6} = 3 \times$ ……

12) -1 ..... [-3 , 0 [$(\in, \notin)$

13)] -4 , 3] – R_+ = …….

14) -3 ..... . [-1 , 4] $(\in, \notin)$

15) R – [-2 , ∞ [=……

16) $\sqrt{64}$ .....] 6 , ∞ [$(\in, \notin)$

17) Q ∩ Q' =…....

18)Q ∪ Q' =…....

19)R - Q = …….

20) $R_- \cap R_+$ = ...

21) R ∪ N = ...

22) $|-5|$ ..... [5 , 9 [$(\in, \notin)$

23) $\sqrt{2}$ ..... [2 , 5] $(\in, \notin)$

24) 3 ……] 3 , 6] $(\in, \notin)$

25) If $x^2 = 36$, then x^3 = ……

26) $2\sqrt{3} \times 3\sqrt{5}$ = …….

27) If $x^3 = 125$, then x^2 = ……

28) $\sqrt{3}(\sqrt{6} - \sqrt{8})$ = ……..

29)The irrational number is the number that we cannot write in the form .....

30) The conjugate of irrational number $\sqrt{7} + 1$ is ……..

31) The conjugate of irrational number $-2 + \sqrt{2}$ is ……..

32)] - ∞ , 4] ∩ [-1 , ∞ [=……..

33) $\sqrt[3]{-125\,a^6} + \sqrt{25\,a^4}$ = ……

34) If $a^2 + 4 = 0$ then its S.S in R is .....

35) If the area of a circle is 154 cm^2 then its radius is .....

2.Choose the correct answer:

1) $\sqrt[3]{2} + \sqrt[3]{2}$ = ……

(a) $\sqrt[3]{2}$ (b) $\sqrt[3]{4}$ (c) $\sqrt[3]{8}$ (d) 2 $\sqrt[3]{2}$

2) [-3 , 7] – { -3 , 7 } = ……

(a)] -3 , 7 [(b) [-3 , 7 [(c)]-3 , 7] (d) [-2 , 6]

3) The Multiplicative inverse of the number $\frac{\sqrt{3}}{9}$ is ……

(a) $3\sqrt{3}$ (b) $\sqrt{3}$ (c) 3 (d) 3

4) The set of non negative real numbers can be written in the form of an interval as …

(a) [0,∞[(b)]0 ,∞[(c)]- ∞,0 [(d)]- ∞,0]

5) The set of positive real numbers can be written in the form of an interval as ……

(a) [0,∞[(b)]0 ,∞[(c)]- ∞,0 [(d)]- ∞,0]

6) $\sqrt{64} - \sqrt[3]{64}$ = ...

(a) $\sqrt{64}$ (b) 4 (c) 8 (d) $\sqrt{4}$

7) If $8y^3 = -125$ then y = …… ($\frac{5}{8}, \frac{-5}{2}, \frac{-125}{2}, -5$)

---

3) If X = [3,7] , Y = [1, ∞ [then find using the number line :

a) $X \cup Y$ b) $X \cap Y$

c) $X - Y$ d) $Y - X$

e) X' f) Y'

4) simplify :

1) $\sqrt[3]{125} - \sqrt[3]{24}$

2) $7\sqrt{2} + 3\sqrt{2}$

$\sqrt{75} - 2\sqrt{27} + 3\sqrt{3}$

$\sqrt{18} + 2\sqrt{8} - \sqrt{24}$

5) $\sqrt[3]{54} - 2\sqrt[3]{-128} + \sqrt[3]{16}$

6) $\sqrt[3]{54} + 8\sqrt[3]{\frac{-1}{4}} + 5\sqrt[3]{16}$

---

5) Given $x = \frac{4}{\sqrt{7} - \sqrt{3}}$ **and** $y = \sqrt{7} - \sqrt{3}$

Prove that : x **and** y **are Conjugates , then find :** $x^2 - y^2$

6) **If** $x = \sqrt{8} + \sqrt{3}$ **and** $y = \sqrt{8} - \sqrt{3}$ **, find the value of** $\frac{x+y}{xy-3}$

7) **If** $x = \sqrt{2} + \sqrt{5}$, $y = \sqrt{2} - \sqrt{5}$

Find the value of the expression: $x^2 + 2xy + y^2$

---

8) find the S.S in R :

a) $3x^2 + 125 = 221$

b) $2x^2 + 3 = 21$

c) $3x^3 + 1 = 82$

d) $(x^2 + 2)^3 = 64$

---

(9) Prove that:

1) $\sqrt{2}$ is included between 1.4 and 1.5

2) $\sqrt[3]{2}$ is included between 1.2 and 1.3

3) $\sqrt{3}+1$ is included between 1.2 and 2.8

(10) Determine the point that represents each of following numbers on the number line:

1) $\sqrt{5}$ 2) $-\sqrt{5}$ 3) $\sqrt{5}+1$ 4) $1-\sqrt{5}$

11)Solve in R the following and represent them on the number line:

1) $2X-3\geq 1$ 2) $3(X-1)<9$

3) $5<X+3<11$ 4) $1\leq 2X-1\leq 9$

5) $5<7-X\leq 8$ 6) $4X+3\leq 6X+5$

7) $3(X+2)>5X$ 8) $2-3(X-5)\geq X+7$

9) $3x-3\leq 7X+1\leq 3X+17$

12) The lateral area of a right circular cylinder $52cm^2$ and the length of its diameter is 8cm. find its volume. **(π = 3.14)**

13) If the height of a right circular cylinder equals its radius length and its volume is $72\pi cm^3$,find its height.

14) A metallic sphere with diameter length 6cm. has got melt and changed in to a right circular cylinder with radius 3 cm. find its height.

15) The volume of a sphere is $562.5\pi\ cm^3$ find its surface area in terms of π

Final revision on unit 2

(1) Complete:

1) The slope of the straight line which passes through the points

(-1, 4) , (2, 4) is .....

2) The slope of any straight line parallel to x – axis = …….

3) The slope of any straight line parallel to y – axis is …….

4) If (-2 , 7) satisfies the relation 2 x + k y = 9 , then k =…….

5) If the slope of the straight line passing through (2 , c) and

(3 , -1) is 4 , then c = ……..

6) If (4 x , -6) = (12 , 3 y) , then x = ……. and y = ……

7) If (a , 3) is one of the solutions of the equation x – 3y = 13 ,

then a = …….

8) The slope of any horizontal line = …….

9) The slope of any vertical line = ……

10) 4–If (K, 3K) satisfies the relation X + 5Y = 15, then K = …….

(2) Find the slope of the straight line which passes through the points:

1) (4, 3) , (2, 5)

2) (-6, -2) , (-3 , -4)

3) (4, -2) , (4, -7)

4) (-5, -3) , (-2, -3)

(4) Graph each of the following relations:

1) y = 2x+ 1

2) x + y = 2

3) y = 3

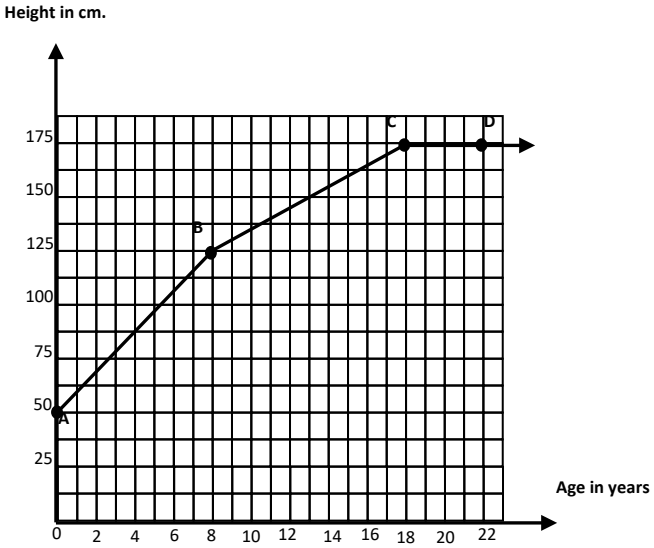
4) 2x = 4

5) **the opposite figure shows the relation between the height of a person (in cm.) and his age (in years):**

1. Find the slope of $\overleftrightarrow{AB}, \overleftrightarrow{BC}$ *and* $\overleftrightarrow{CD}$

What is the meaning of each?

2. Calculate the difference between the height of this person when he was 8 years old and his height when he Was years old.



Final revision on unit 3

6) A class has 50 pupils , the following table shows the distribution of studying hours between them every day :

Sets	1-	2-	3-	4-	5-	6-	7-	Total
Frequency	2	3	5	12	15	7	6	50

a)Find the mode mark using the histogram of this distribution.

b) Find the median

c) find the mean

(2) The following table shows the frequency distribution of the

weights of 50 students in kilograms :

Weight in Kg.	30-	35-	40-	45-	50-	55-	Total
No. of students	K+4	3K	4K	3K+1	3K-1	K+1	50

Find:

(A) The value of K.

(B) Graph the frequency histogram , then find the mode weight.

1)Complete each of the following:

1- The mode of a set of values is ……..

2- The mode of the values 3,6,10,13,19,19,21 is ……

3- If the mode of the values $\frac{1}{3}$, $\frac{1}{7}$, $\frac{1}{5}$, $\frac{1}{7}$ is $\frac{1}{X}$ then x = ……

4- The mode of the values 8 , 11 , 5 , 8 , 4 , 5 , 4 , 11 , 4 is …….

5- If the mode of the values a+2 , a+1 , a+3 , a+2 equals 12, then a=……...

1) Choose the correct answer from those given:

1- The median of the values : 8,17,4,6,10 is ……..

a)11 b)10 c)8 d)6

2- The median of the values : 3,7,2, 9, 5,11 is ……..

a) 5 b)6 c)7 d)12

3- The median of these numbers : 2,5,5,6,7,9,11,14,16,21 is ……

a)7 b)8 c)9 d)16

4- If the order of the median of a number of values is the third then the number of these values is ……..

a)3 b)4 c)5 d)6

1) Choose the correct answer from the given ones:

1- The mean of the values 5,12,6,17 is ……..

a)3 b)4 c)5 d)10

2- The mean of these numbers 2,5,8,9,14,28 is …….

a)6 b)8 c)9 d)11

3- If the mean of the values 3 , 4 , 8 , a , a+2 is 15 , then a = …….

a)29 b)58 c)75 d)17

4- The mean of the values 2 – a , 4 , 1 , 5 , 3+a is ……

a)1 b)2 c)3 d)15

5-If the mean of side lengths of a triangle is 8 , then the perimeter of triangle ……..

a)8 cm b)18 cm c)24 cm d)15